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ASPECTS OF TREATMENT*

Minimal surgery for chronic obstruction in patients with extensive or universal Crohn's disease

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Summary

Patients with extensive chronic Crohn's disease of the small bowel, who may have had repeated excisional surgery, sometimes develop intestinal obstruction due to the development of a stricture. Surgery is usually thought to be contraindicated since further resections would leave the patient with insufficient small intestine to maintain a normal state of nutrition. Nine such patients have been treated since 1979 by operations which have been designed simply to relieve the obstruction. After careful preparation with intravenous alimentation, clearing the intestine of its contents, and the use of prophylactic antibiotics the strictures were treated with minimal excisions, enteroenterostomies, and 'strictureplasties' according to their length and the degree of inflammation. In spite of the apparent danger of carrying out the operations through active Crohn's inflammation there have been no fatalities or major complications and the long-term results have been good.

Introduction

Most gastroenterology units have reported that a high proportion of patients with Crohn's disease require surgical treatment at some time in the course of their illness. Because recurrences continue to develop many of them need more than one operation. In spite of this the majority can be maintained in an excellent state of health by a judicious combination of medical and surgical treatment. However, a small group of patients have proved to present much more of a problem. These are often young people whose disease may spread rapidly after each operation until they have such extensive and diffuse inflammation that further surgery is considered to be strongly contraindicated. A particularly difficult problem occasionally arises when such a patient develops an intestinal obstruction in the small bowel. If the blockage is treated in the conventional way by removing all the inflamed bowel the resection that will have to be carried out to reach apparently normal intestine will be so extensive that the patient is likely to be left with too little small bowel to maintain a normal state of nutrition. There are many such patients who require to be admitted frequently to hospital for intravenous alimentation just to survive. Because of this fear most patients with diffuse disease and strictures are treated conservatively. Most units have to look after one or two of these problem patients, who are in a chronic state of ill health as the result of a combination of malnutrition and hypercorticoidism.

This paper records our experience with 9 such patients who have been treated during the past 3½ years by using surgical techniques not previously employed for Crohn's disease and which we have called minimal operations.

Material

All 9 patients had extensive Crohn's disease of the small intestine. The majority had had one or more previous resections. Seven of the patients had macrosopically diagnosable inflammation in other parts of the gut (for example, colon or perianal region) and 4 had widespread lesions in the oesophagus, stomach, and duodenum as well as the small and large intestine. Two had required a gastroenterostomy operation for duodenal obstruction. All the patients had begun having symptoms at an early age (average 13.2 years) and were young adults at the time the operations reported here were performed, their average age then being 26.1 years. The table summarises the anatomical extent of the disease and the current problem when minimal surgery was undertaken.

Indications for surgery

The indication for surgery in all the patients was

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Anatomical extent of disease and current problem

Patient	*Sex*	*Age (yrs)*	*Anatomical extent*	*Problem*
1	F	21	Multiple areas of inflammation throughout small bowel. Two segments of colitis	17 cm of multiple obstructions
2	F	24	Inflammatory lesions in oesophagus, stomach, and residual 45 cm of small gut. Ileostomy, diffuse colitis	2 small-bowel strictures (nearly complete)
3	M	20	Multiple segments of small-bowel inflammation. Ileostomy, subtotal colectomy	3 tight intestinal strictures
4	M	34	Previous extensive resections, massive active recurrence	7 cm of multiple strictures
5	F	24	Proctocolectomy and multiple small-bowel resections for small-bowel disease; 50 cm of residual small bowel above ileostomy	Complete ileal stricture
6	F	34	Diffuse small-bowel disease. Segment of colitis	2 short and 2 longer strictures
7	M	30	Extensive small-bowel disease	4 short strictures
8	F	27	Previous multiple resections of small bowel. Diffuse active recurrence	Short tight pre-anastomotic recurrence
*9	F	23	Small- and large-bowel inflammation. Ileostomy for extensive colitis and gross perianal disease	Chronic pre-ileostomy stricture causing pre-ileostomy intussusception with short segment of gangrene

*Treated as an emergency

chronic intestinal obstruction characterised by colicky abdominal pain and, in most cases, by marked weight loss. One patient (No 9), who had developed a recurrence proximal to an ileostomy which gradually became obstructed, required emergency surgery when the lesion intussuscepted into the abdominal wall and became gangrenous. She was treated conservatively at her local hospital for 10 days because the remainder of the small bowel was so extensively affected that further surgery was thought to be absolutely contraindicated. Two of the patients (Nos 1 and 3) suffered from severe hypoproteinaemia. All 9 had been treated with corticosteroids and 4 had clinical signs of hypercorticoidism. Anaemia was common.

Diagnosis

Preoperative assessment of the extent of disease in the small bowel and the length and sites of obstruction was made radiologically in 8 of the patients by the technique of small-bowel barium enema or enteroclysis *(1–3)*. This investigation is a major advance in the management of patients with Crohn's disease of the small intestine because it produces much better visualisation of the jejunum and ileum than does the standard barium follow-through examination. It is particularly important in the type of patient described here because it is possible to concentrate attention during the examination on narrowed segments of bowel which may be truly obstructed

or only in spasm. Spastic segments can usually be opened by instilling more barium down the tube. The exact site or sites of organic obstruction can thus be demonstrated.

Preoperative preparation

Careful preoperative preparation was carried out on all the patients except for the one with intussusception. Fluid and electrolyte deficiencies were replaced. Anaemia was corrected. Intravenous hyperalimentation was given for 7 days before operation through a central venous line. The discontinuation of oral feeding served to empty the obstructed bowel in all but 2 patients, who required nasogastric intubation as well. Prophylactic antibiotics were given in the form of metronidazole and a broad-spectrum antibiotic to cover the operation. A peroperative regimen of prednisolone was administered intravenously by the technique we have employed for some time *(4)*.

The operation

The abdomen was opened by a standard left paramedian incision, in most cases through a previous scar at that site. Adhesions were freed and a full examination of the abdominal cavity was undertaken. All the patients were found to have extensive Crohn's inflammation; in some it could be described as universal. Although the preoperative radiological examination had given a clear indication of the obstructed sites, it was sometimes difficult to be sure exactly where they lay amongst all the thick inflamed segments, especially as the preoperative preparation had removed the obstructive distension. If difficulty was experienced a large oesophageal tube or fibreoptic gastroscope was passed through the mouth and manipulated by the surgeon through the intestine, distending the bowel as it was advanced. Narrowed areas which could be negotiated were ignored, but segments were treated surgically if the lumen was too narrow to be traversed.

TYPES OF STRICTURE

Figure 1 illustrates the three main types of stricture that were found.

OPERATIVE PROCEDURES

Three types of local procedure were used to overcome the obstruction:

1) 'Strictureplasty' If a short-segment stricture was found and the walls of the bowel were pliable and not rigid a longitudinal incision was made on the antimesenteric border of the gut with cutting diathermy. This opening was then sewn up transversely in the manner of a pyloroplasty (Fig. 2A and B).

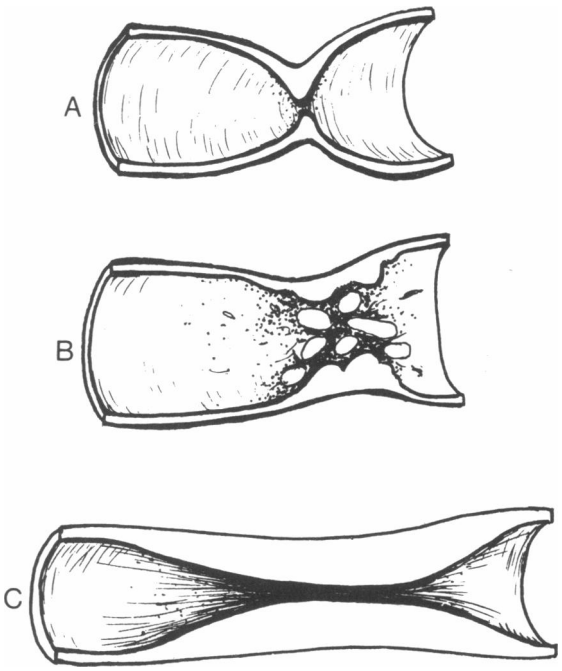

FIG. 1 *Types of stricture found at operation: (A) Short-segment obstructions mainly caused by annular fibrosis in the bowel wall, little surrounding inflammation. (B) Longer-segment obstructions commonly had active inflammation in the mucosa, some being typically cobble-stoned. (C) Long-segment obstructions had marked thickening of the gut wall with typical hose-pipe appearance of chronic inflammation.*

2) Local bypass If a short stricture was found with marked thickening of the adjacent intestinal wall which would make a strictureplasty difficult a small side-to-side anastomosis was made between segments of bowel just proximal and distal to each obstructing lesion (Fig. 2C). Examination of the lumen of the bowel during the anastomosis often showed that active ulceration was present at the site of the blockage. Sometimes a typical cobble-stone pattern of mucosal swelling and ulceration was found. This usually lay on the mesenteric side of the bowel.

3) Minimal resection When the obstructing lesion was found to be a relatively long segment (usually not more than 5 cm) it was excised locally until it was judged that the proximal and distal lumen was not obstructed. The cut ends were joined together end-to-end.

It must be stressed that in every case the bowel was sutured through macroscopically obvious Crohn's inflammation. It is for this reason that the technique has been called minimal surgery since the aim was simply to relieve the obstruc-

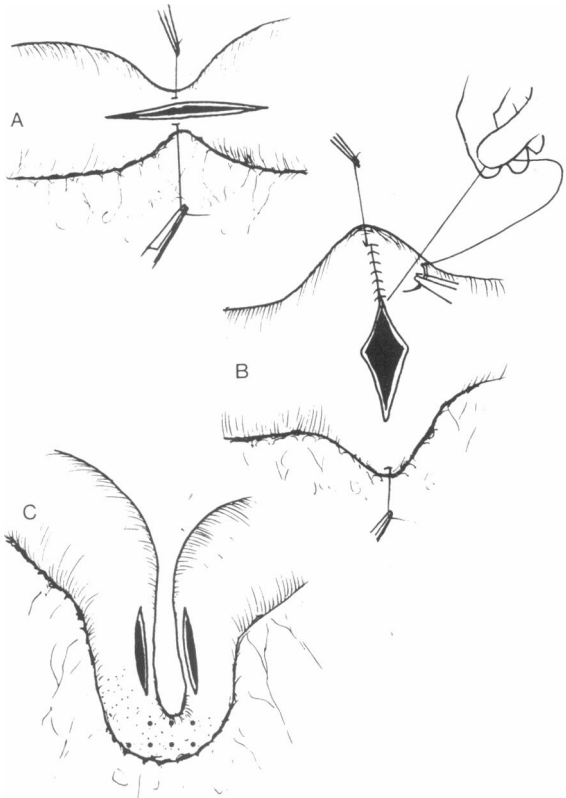

FIG. 2 *Types of operation: (A) and (B) Technique of strictureplasty. After cutting through the stricture longitudinally (A), the opening is closed transversely. (C) Side-to-side enteroenterostomy to bypass a stricture.*

tion and not to excise completely the Crohn's disease. In all the patients extensive inflammation was left behind. All openings in the bowel and anastomoses were closed with two layers of absorbable sutures (catgut or Dexon). A total of 8 minimal resections, 3 bypasses, and 9 strictureplasties were carried out during the 9 operations.

Postoperative course

There were no deaths. No patient suffered a major complication. In particular, there were no intraperitoneal abscesses or leaks from the suture lines. The patient treated as an emergency developed a minor wound abscess. No patient had a protracted stay in hospital. The antibiotics were given intravenously for 5 days. Intravenous feeding and nasogastric suction were continued for 7–10 days (considerably longer than is our usual practice), but no patient developed an ileus. Abdominal wound healing was normal.

Long-term results

The length of follow-up has been from 8 to 42 months. One patient, the one with intussusception, developed a second stricture at the site of the previous resection proximal to the ileostomy; this was successfully removed by moblising the ileostomy. None of the remaining 8 patients has developed a recurrence of the stricture or a new obstructing segment. Two patients (Nos 3 and 4) have had a flare of symptoms which resulted in slight weight loss in one and attacks of diarrhoea in the other. Both patients have been successfully controlled by an increase in corticosteroid or other medical treatment.

All the patients had a marked improvement in general health within a short time of the operation. This was best seen by a dramatic increase in weight in 8 of the patients, whose weight loss was a major symptom. The weight gain has been well sustained for considerable lengths of time with only minor fluctuations (Fig. 3).

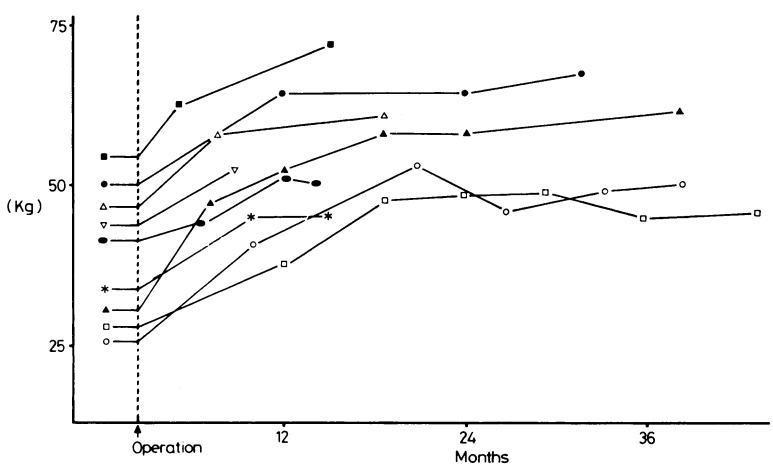

FIG. 3 *Long-term follow-up of weight of 9 patients treated by minimal surgery for obstruction (1kg = 2.2lb).*

Discussion

This technique has been described at gastroenterological meetings *(5)*, but we have delayed reporting it widely in spite of the marked benefit obtained by a group of patients who present one of the most difficult problems of management in clinical medicine. The reason has been the fear that this type of surgery may have a high mortality and little long-term benefit. Our particular worry was that the technique contravenes a widely held surgical view — that it is hazardous to anastomose bowel in which Crohn's inflammation is active. At the very least a high incidence of postoperative fistulae is expected as these operations depend on the possibility of sewing together the wall of bowel which is obviously grossly diseased. However, the results have been very encouraging; not only have we not encountered suture-line leaks or fistulae, but the effect of relieving the obstruction has been dramatic and sustained.

Conclusion

Simple relief of an obstructing lesion in patients with diffuse Crohn's disease results in lasting benefit. Although potentially dangerous, with careful pre- and postoperative preparation and meticulous technique these minimal operations have been shown to be safe.

References

1 Scott-Harden WG, Hamilton HAR, McCall Smith S. Radiological investigation of the small intestine. Gut 1961;2:316–22.

2 Sellink JL. Examination of the small intestine by means of duodenal intubation. Leiden: Stenfert Kroese, 1971.

3 Nolan DJ. Barium radiology in the diagnosis of Crohn's disease. In Lee ECG, ed. Crohn's disease: a global assessment. Aylesbury: HM & M, 1981.

4 Allsop JR, Lee ECG. Factors which influenced postoperative complications in patients with ulcerative colitis or Crohn's disease of the colon on corticosteroids. Gut 1978;19:729–34.

5 Lee ECG. Surgery in Crohn's disease. In: Pena AS, Weterman IT, Booth CC, Strober W, eds. Developments in gastroenterology vol 1. The Hague; Martinus Nijhof, 1980.